GARMIN

GPSMAP® 76

chartplotting receiver

owner's manual

Including Minnesota DNR Garmin 5x Instructions

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This tutorial will cover how to use the Garmin 76 GPS unit to collect points and import them into ArcMap 9 using the DNR Garmin extension. It will also cover how to upload shapefile points to the garmin.

1. Using the Garmin GPS
    a. Parts of the Unit

Unit Basics

Interface Keys

IN/OUT Zoom Keys
- From the Map page, press to zoom in or out
- From any other page, press to scroll up or down a list

NAV/MOB Key
- Press and release at any time to view the Find Menu page
- Press and hold for MOB

POWER Key
- Press and hold to turn unit On/Off
- Press and release to adjust backlighting

QUIT Key
- Press and release to cancel data entry or exit a page

ROCKER Key
- Move Up/Down or Right/Left to move through lists, highlight fields, on-screen buttons, icons, enter data or move the map panning arrow

PAGE Key
- Press to cycle through the main pages
- Press when using the on-screen keyboard to close
- Press to end an operation in progress and return to the main page.

MENU Key
- Press and release to view options for a page
- Press twice to view the Main Menu

ENTER/MARK Key
- Press and release to enter highlighted options, data, or confirm on-screen messages
- Press and release at any time to mark your current location as a waypoint

b. Basic Operation

To turn On and Off the GPSMAP 76:

1. Press and hold the red **POWER** key. When the unit powers on, a tone sounds and the Warning and Information pages are displayed.
2. To acknowledge that you have read and understand the Information and Warning pages, press **PAGE**. You will now see the Satellite Information page.
3. To turn off the GPSMAP 76, press and hold the red **POWER** key again.

Initializing the GPS Receiver:

1. With fresh batteries installed, take the unit outside for a clear 360° view of the sky.
2. Turn the unit on and hold it in front of you with the top of the unit tilted upward. Follow the screen prompts, pressing **PAGE** to display the GPS Information page.
3. The initialization process is automatic. It should take the GPSMAP 76 no longer than five minutes to acquire enough satellite signals to become operational. When the unit is able to navigate, it displays either 2D GPS Location or 3D GPS Location in the Receiver Status field.

Adjusting Backlight and Contrast

You may want to adjust the backlight/contrast to see the display better.

To adjust the backlight/contrast level:

1. Press and quickly release the **POWER** key.
2. Press the **ROCKER** key UP to increase the brightness or DOWN to decrease the brightness.
3. Press the **ROCKER** key RIGHT to increase the contrast or LEFT to decrease the contrast
3. Press **ENTER** or **QUIT** to close the Backlight/ Contrast adjustment window.

When initializing the receiver or trying to receive satellite signals, orient the GPSMAP 76 so the top of the unit points toward the sky. If the unit is held with the top of the unit pointed toward the horizon, satellite reception may be severly degraded.

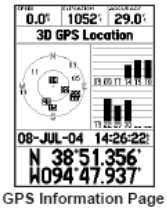
MAIN PAGES

There are five main display pages: the GPS Information page, Map page, Pointer page, Highway page, and the Active Route page. You can cycle through these pages by pressing either the **PAGE** or **QUIT** keys.

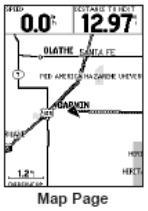
With the GPS Information page displayed, press **PAGE** several times. Notice that each time you press **PAGE** the next main page is displayed. Do the same with the **QUIT** key. Notice **QUIT** acts the same as **PAGE**, except the pages are displayed in a reverse sequence. Press **PAGE** until the Map page is displayed.

Each main page has an Options Menu. This Options Menu contains the setup options and functions that apply to that page. Press the **MENU** key to display the Options Menu. Use the **ROCKER** key to select and item from the options menu and press **ENTER**. Many of the menus in the GPSMAP 76 are arranged in a tab layout. Use the Left/ Right **ROCKER** key to move from tab to tab.

Notice that either the **PAGE** or **QUIT** keys stops the current function and returns you to the main page. If you find yourself lost in a menu or you accidentaly start a function you do not want, just press the **PAGE** or **QUIT** key.



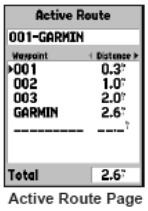
GPS Information Page



Map Page

Pointer Page

Highway Page



Active Route Page

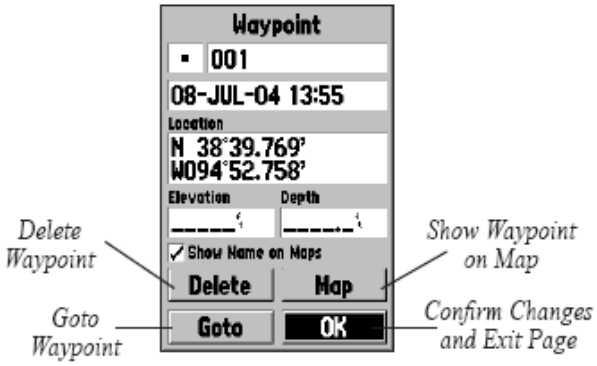
c. Creating a waypoint

Creating a Waypoint

The term Waypoint may be new to you, but is frequently used when discussing navigation. A Waypoint is a position stored in the unit's memory used for direct navigation or to build a Route.

The unit has to be turned on and receiving at least three satellites (or simulating navigation) to mark a waypoint. There are three methods for creating waypoints in the GPSMAP 76. You can press the **ENTER/MARK** key while at a location, create a waypoint on the Map page, or enter coordinates for a waypoint manually.

Creating a waypoint using the ENTER/MARK key—Press and hold **ENTER/MARK** key until the Mark Waypoint page is displayed. At this point, you can edit the waypoint name, symbol, date/time, elevation, and depth. Highlight the **OK** button and press **ENTER** to save the waypoint.



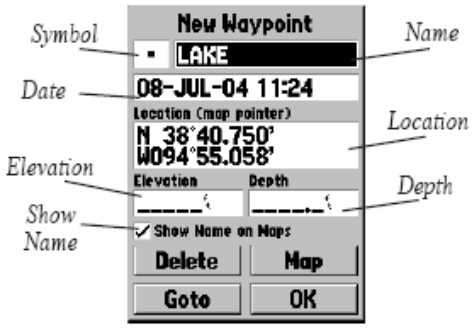
Editing Waypoints

You can edit waypoints at the time they are created or at a later date. There are six items that can be changed: the symbol, name, location, date/time, elevation, and depth. You also have the option to show the waypoint name on the Map page.

Editing a Saved Waypoint—Press the **MENU** key twice to display the Main Menu. Highlight **Points** and press **ENTER**, highlight **Waypoints** and press **ENTER** again. Select the desired waypoint from the list and press **ENTER** to display the Waypoint page. When finished, highlight the **OK** button and press **ENTER** to accept the changes. See page 42 for more information on the waypoint list.

Selecting a Symbol—Highlight the symbol field and press **ENTER**. Use the **ROCKER** key to select a symbol from the list and press **ENTER**. The selected symbol is now displayed at the waypoint location on the Map page.

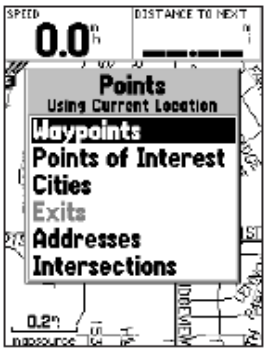
Changing the Name—Highlight the name field and press **ENTER**. Use the **ROCKER** key to scroll through the alpha-numeric list and make a selection. Press the **ROCKER** to the right to move the next placeholder. When finished, press **ENTER** to accept the changes.

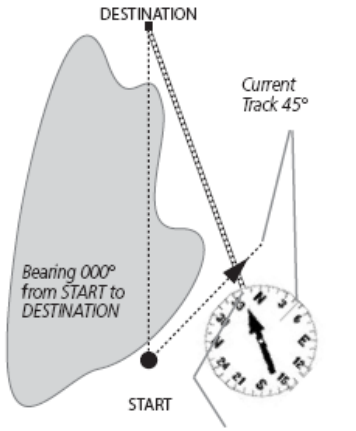


d. Go to a waypoint

To go to a waypoint:

1. Press the **NAV** key.
2. Highlight **Go To Point** and press **ENTER**.
3. Highlight **Waypoints** and press **ENTER**.
4. Highlight the desired waypoint and press **ENTER**.
5. Highlight the **Goto** Button and press **ENTER**.





The GPS provides a straight line, direct navigation course to your destination. Since it is not always possible to follow a straight line from start to finish, as you move, the Pointer always points toward your destination and the Compass Ring always shows your current track.

e. Interface modes

Interface Tab

The Interface tab contains one field: Serial Data Format. This field contains eight settings that allow the GPSMAP 76 to communicate with computer software and other electronic devices.

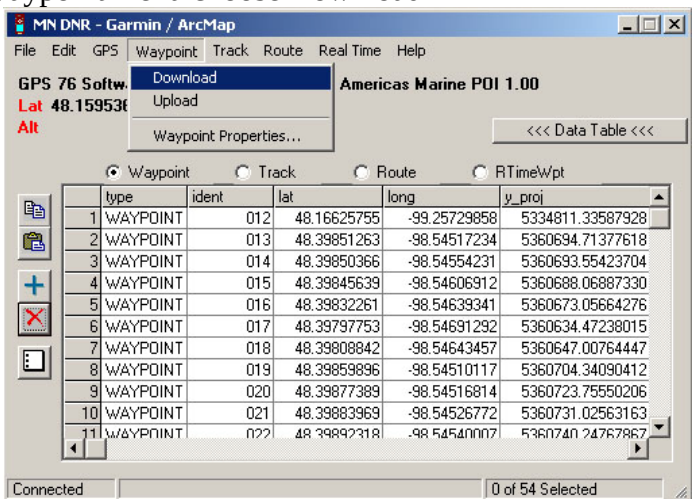
- **GARMIN**—allows the GPSMAP 76 to communicate with Garmin software and other Garmin GPS units.
- **GARMIN DGPS**—allows the GPSMAP 76 to communicate with Garmin Differential Correction devices. The unit can have the beacon receiver scan for available DGPS beacon or can tune the beacon receiver to the frequency and bit rate of a nearby DGPS beacon.
- **NMEA**—causes the unit to transmit NMEA data. It also allows the GPSMAP 76 to accept NMEA data from another NMEA device, like a echo sounder. The baud (speed of communication in bits per second) is displayed in the Baud field.
- **Text Out**—allows the GPSMAP 76 to output simple text data that includes, date, time, position, and velocity information. The Baud can be set to 1200, 2400, 4800, or 9600 bps.
- **RTCM In**—allows the GPSMAP 76 to accept DGPS information from a device supplying RTCM data in a SC-104 format. The Baud can be set to 1200, 2400, 4800, or 9600 bps.
- **RTCM In/NMEA Out**—functions the same as the GARMIN DGPS setting except, the unit outputs NMEA 0183, version 2.3 sentences, GPRMC, GPGGA, GPGSA, GPGSV, GPGLL, GPBOD, GPRTE, and GPWPL.
- **RTCM In/Text Out**—functions the same as the RTCM In setting except the unit outputs simple text data that includes date, time, position, and velocity information. The Baud can be set to 1200, 2400, 4800, or 9600 bps.
- **None**—turns off all serial communication.

f. To use the Garmin with the backpack unit to improve accuracy, choose the "RTCM In/NMEA Out" Interface option and turn off the WASS differential correction. Make sure the power adapter and the antenna cords are plugged in.

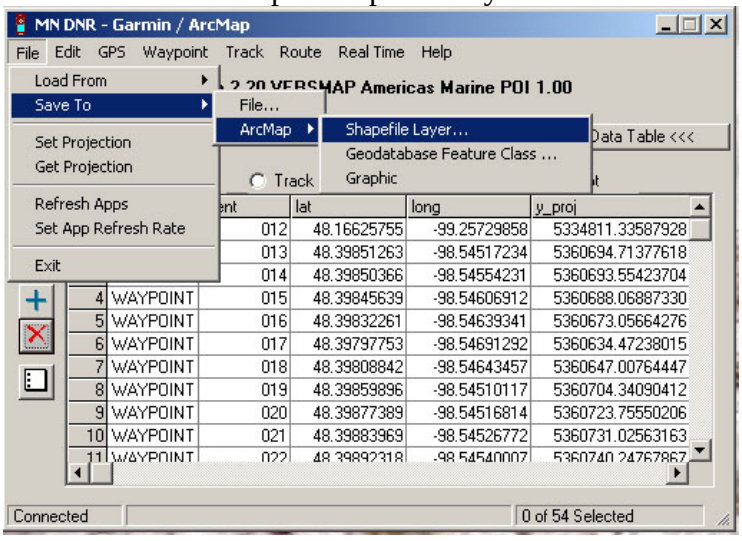
2. Downloading waypoints using the DNR Garmin Software
   a. Make sure you are using DNR Garmin Software version 5 or later. The software can be downloaded from the Minnesota DNR web site.

b. Connect the serial data cable to the back of the Garmin and to the COM port on your computer

c. Turn on the Garmin GPS unit
d. Open ArcMap 9 BEFORE opening the DNR Garmin program.
e. Open the DNR Garmin Software
f. Under the Waypoint menu choose Download

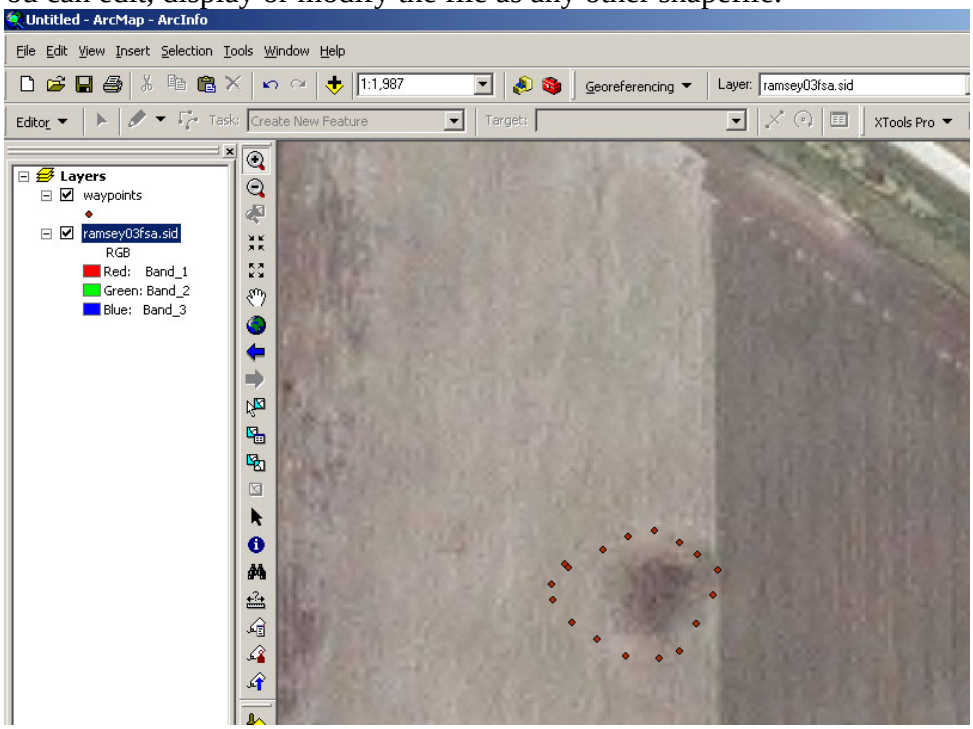


g. All waypoints should appear
h. Select the ones you want to export (or none to export all) by highlighting the numbered grey tab next to the waypoint. Drag you mouse or use the shift key to highlight multiple points.
i. Choose File>Send To > ArcMap > Shapefile Layer

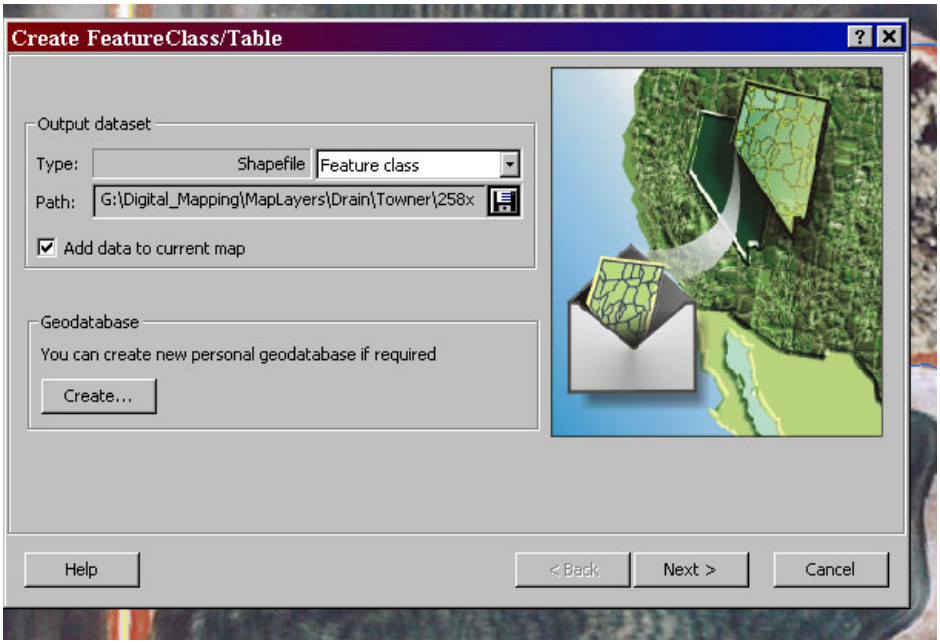


j. The shapefile will automatically be added to your open ArcMap

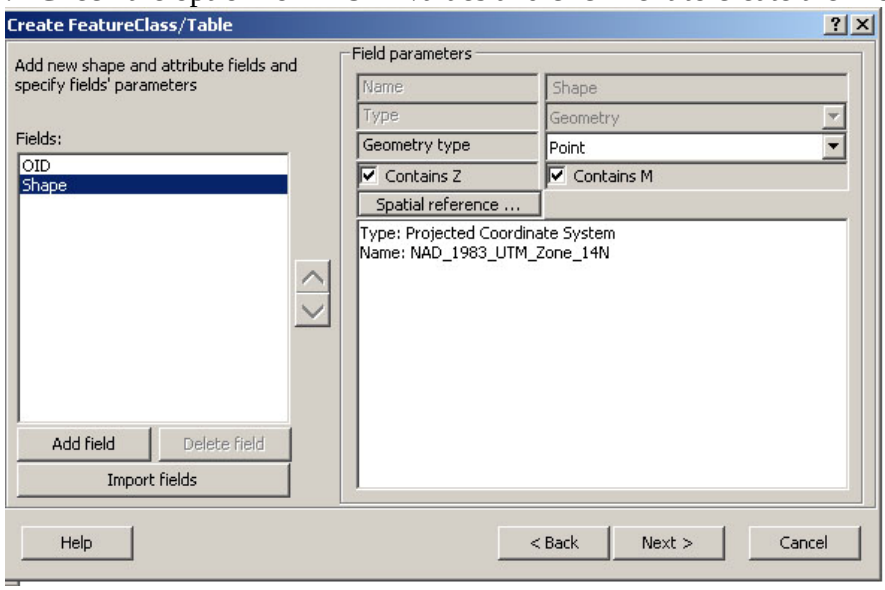
k. You can edit, display or modify the file as any other shapefile.



3. Upload shapefile points to your Garmin GPS as waypoints.
   a. Create a point shapefile in ArcMap.
      i. Point, line or polygon can be used but all will ultimately be converted to points in the GPS so it is easier to start with a point shapefile. If you use polygons the points will be take from the polygon vertices.
      ii. Use the X-tools toolbar to create a new shapefile by hitting the create feature class button 
      iii. Click the disk icon and choose where to save the file

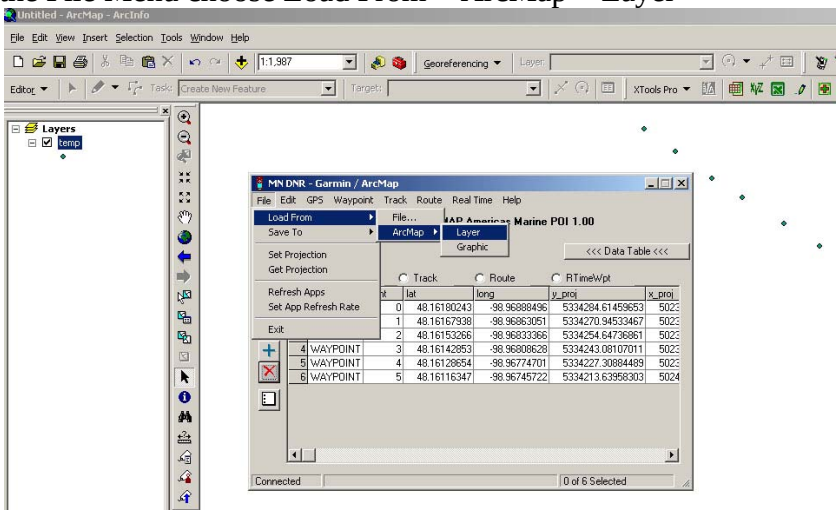


iv. Check the option for M & Z values and click next to create the file

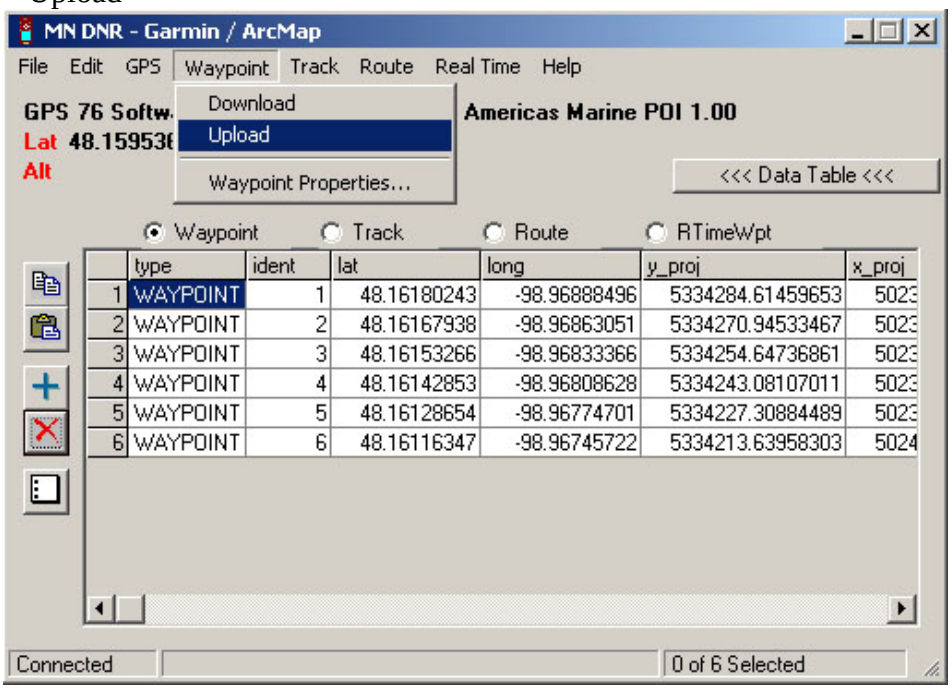


b. Edit the shapefile
   i. Highlight it in the table of contents window and click the start editing button on the x-tools toolbar. 
   ii. Use the editor sketch tool to place the points where you want them. 
   iii. If you need more information on using ArcMap refer to the ArcGIS tutorial
   iv. Save your edits and stop editing when done.

c. Send Shapefile to the Garmin GPS
   i. Make sure the layer you want to send to the Garmin is highlighted in the table of contents window
   ii. Make sure your GPS unit is turned on and plugged into the computer
   iii. Leave ArcMap open in the background and open the DNR Garmin Software.
   iv. On the File Menu choose Load From > ArcMap > Layer



v. You will be prompted to define fields. If you had specific information such as ID Labels in certain fields you may define it, otherwise leave default settings.
vi. It may take a minute to load the shapefile into waypoints.
vii. After waypoints have loaded then from the Waypoint menu choose Upload



viii. All waypoints should be uploaded to the Garmin and the Garmin may beep when finished.

4. Navigate to waypoints
    a. Use the directions found above to “Go to” a specific waypoint.
    b. Using the map screen your waypoints will become visible as you approach them
    c. Using the GPS information page it will warn you as you are approaching a certain waypoint.